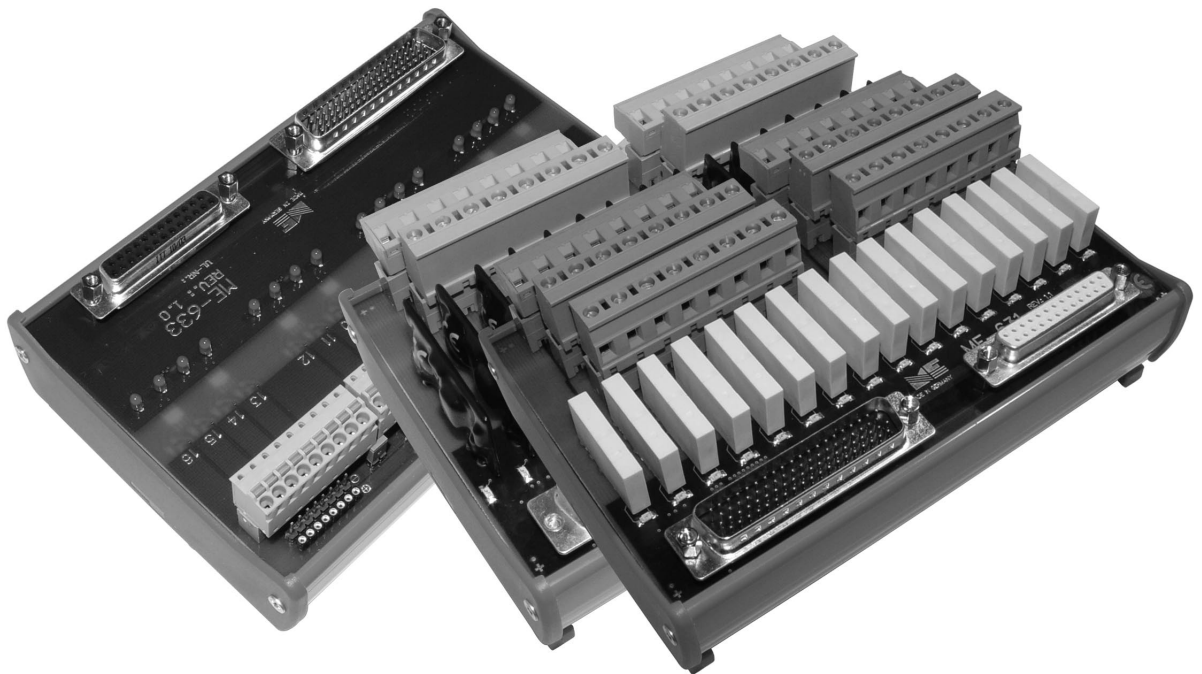


Meilhaus Electronic Manual

ME-63Xtend Series 1.2E



External Extension Board Series

Imprint

Manual ME-63Xtend Series

Revision 1.2E

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Meilhaus Electronic GmbH
Fischerstraße 2
D-82178 Puchheim/Munich
Germany
<http://www.meilhaus.com>

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1 Introduction

Valued customer,

Thank you for purchasing this Meilhaus product. You have chosen a high quality board that left our premises in a fully functional and new condition.

Take the time to carefully examine the contents of the package for any loss or damage that may have occurred during shipping. If there are any items missing or if an item is damaged, contact Meilhaus Electronic immediately.

1.1 Warning



The device was developed and produced in accordance to the EMC low voltage directive 73/23/EWG. When putting the device into operation especially with voltages greater than 42 V please follow the appropriate standards, installation instructions and national safety standards. Meilhaus Electronic GmbH assumes no responsibility for damage in case of faulty installation, operation or handling.

1.2 Package contents

We take great care to make sure that the package is complete in every way. We do ask that you take the time to examine the contents of the box.

Your box should consist of:

- External extension board of the ME-63Xtend series
- Manual in PDF format on CD-ROM (optional as printed version)
- additionally:
 - ME-632: 19 jumpers
 - ME-633: 19 jumpers, 4 resistor arrays
 - ME-634: 18 jumpers, 2 resistor arrays

2 Hardware

The **ME-63Xtend series** consists of external extension boards for DIN rail mounting. The series includes the following models:

Model	Description	Page
ME-631	16 relays form C, up to 6A, 30VDC/240VAC	9
ME-632	16 opto-isolated digital inputs (2,5...60V)	13
ME-633	16 opto-isolated digital outputs, up to 60V (Open Collector)	17
ME-634	8 opto-isolated digital inputs (2,5...60V), 8 opto-isolated digital outputs up to 60V (Open Collector)	22
ME-635	16 electronic power relays, 5A/240VAC	27

Table 1: Model Overview ME-63Xtend Series

The opto-isolated I/Os of the models ME-632, ME-633 and ME-634 are isolated up to 2500 VAC_{eff}.

The ME-63Xtend series can be connected with many multi-I/O and digital-I/O boards using appropriate connection cables. The I/O-board requires at least two 8-bit TTL input resp. output ports. For the following boards preconfigured cables are available:

ME-1000	Special cable ME AK-D78/1000 (ME-1000 can not be combined with the ME-634!)
ME-1400(A/B)	1:1 connection cable e.g. ME AK-D78(1)
ME-630 series ME-4600 series ME-6000 series	Special cable ME AK-D2578/4000 via additional mounting bracket for bi-directional ports (ME-630 USB: direct connection to the 25pin D-Sub jack of the device)

Note: A detailed description of the connection options can be found in chapter 2.6 on page 30. Many other multi-I/O and digital-I/O boards with appropriate TTL ports can be connected by special cables!

Table 2: Compatible I/O boards

Attention: Make sure that no contact with voltage carrying parts can happen by the wiring of the board. The external connections to the board should only be made or removed in a powered down state.

Look for proper connection of the cable. It must join the Sub-D jack completely and must be fixed with the both screws. Otherwise a proper operation of the board can not be guaranteed!

2.1 ME-631

The **ME-631** is an external **relay board with 16 change-over relays** (form C). The relays can switch up to 30 VDC/6 A or 240 VAC/6 A (specifications see page 37). To drive the relays a buffer circuit is inserted. For status control one LED per channel is assembled. It is connected in parallel to the relay coil. Depending on the I/O-board further signals are feed-through to the 25-pin D-Sub female connector ST2 (see table 3).

For relay control the following assignment is valid:

	Relay 1...8	Relay 9...16	ST2
ME-1000	Px0...7	Px8...15	Px16...31
ME-1400(A/B)	PA0...7	PB0...7	PC0...7 counter 0...2 (only ME-1400A/B)
ME-630 series	DIO_C0...7	DIO_D0...7	--
ME-4600 series	DIO_C0...7	DIO_D0...7	--
ME-6000 series	DIO_A0...7	DIO_B0...7	--

Table 3: Controlling the ME-631

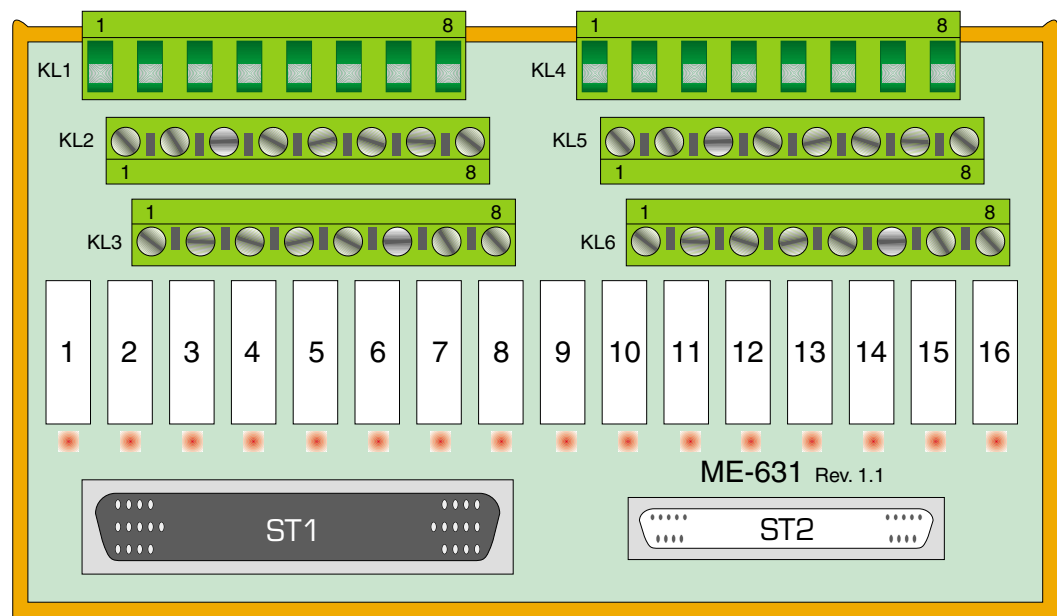


Diagram 1: ME-631

2.1.1 Block Diagram

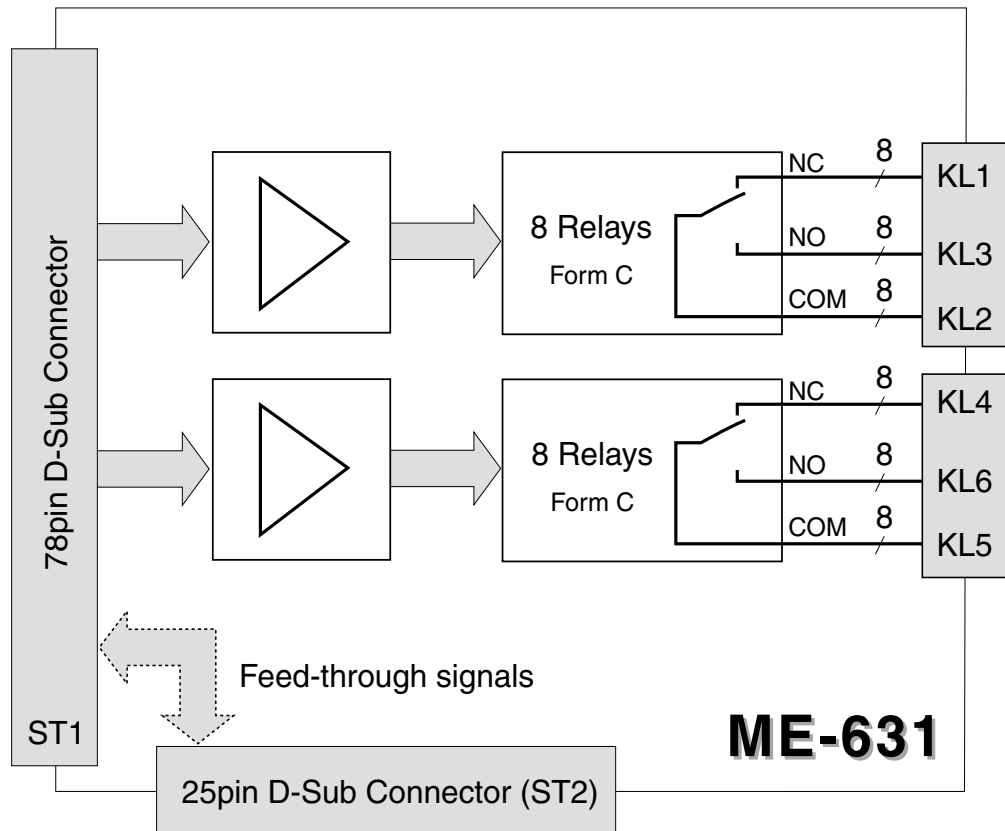


Diagram 2: Block diagram ME-631

2.1.2 Protection Circuit

On the ME-631 electro-mechanical power relays are used. They can switch currents up to 6 A. During switching the relays induced voltages and high transient currents occur. Therefore the use of a **protection circuit** for the contacts is urgently needed. To guarantee the efficiency of the protection circuit the distance should not exceed more than 20 cm.

The following diagram shows a typical circuitry that could be used. The values of the components used depend on the load and the relay properties. The condensator C suppresses the discharge when contact opens and the resistor R limits the current when switching the next time. The circuitry can be used for DC and AC operation. The ME-631 offers a make contact as well as a break contact. Therefore the protection circuit must be provided for every contact switching a considerable load.

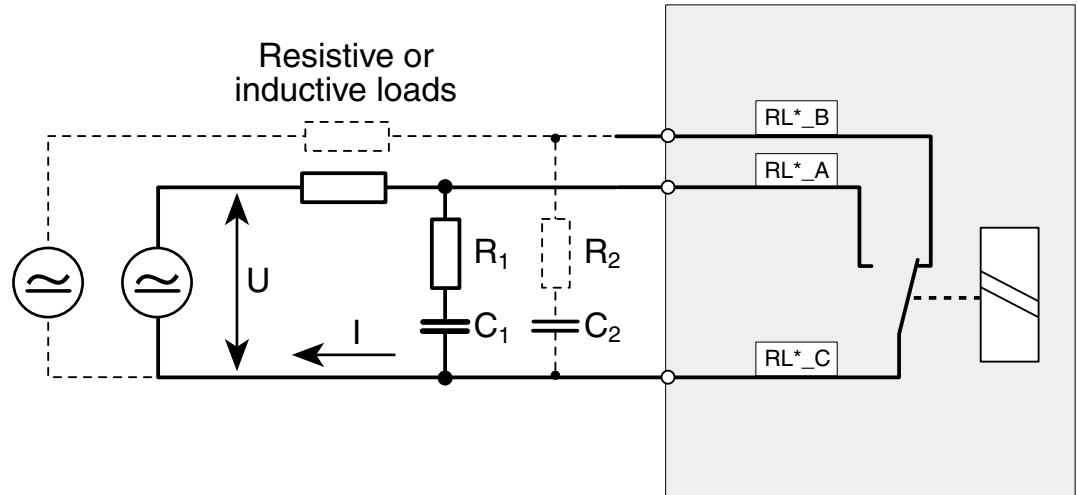


Diagram 3: Protection circuit

As a rule for selection of R_x and C_x use:

R_x : 0,5 bis 1 Ω per 1 V of switching voltage U

C_x : 0,5 bis 1 μF per 1 A of switching current I

2.1.3 Pinout

Clamping block	Pin	Signal	Clamping block	Pin	Signal
KL1	1	Relay 1, NC	KL4	1	Relay 9, NC
	2	Relay 2, NC		2	Relay 10, NC
	3	Relay 3, NC		3	Relay 11, NC
	4	Relay 4, NC		4	Relay 12, NC
	5	Relay 5, NC		5	Relay 13, NC
	6	Relay 6, NC		6	Relay 14, NC
	7	Relay 7, NC		7	Relay 15, NC
	8	Relay 8, NC		8	Relay 16, NC
KL2	1	Relay 1, COM	KL5	1	Relay 9, COM
	2	Relay 2, COM		2	Relay 10, COM
	3	Relay 3, COM		3	Relay 11, COM
	4	Relay 4, COM		4	Relay 12, COM
	5	Relay 5, COM		5	Relay 13, COM
	6	Relay 6, COM		6	Relay 14, COM
	7	Relay 7, COM		7	Relay 15, COM
	8	Relay 8, COM		8	Relay 16, COM
KL3	1	Relay 1, NO	KL6	1	Relay 9, NO
	2	Relay 2, NO		2	Relay 10, NO
	3	Relay 3, NO		3	Relay 11, NO
	4	Relay 4, NO		4	Relay 12, NO
	5	Relay 5, NO		5	Relay 13, NO
	6	Relay 6, NO		6	Relay 14, NO
	7	Relay 7, NO		7	Relay 15, NO
	8	Relay 8, NO		8	Relay 16, NO

Table 4: Pinout ME-631

NC: „Normally Closed“

NO: „Normally Open“

COM: „Common“

2.2 ME-632

The **ME-632** is an external extension board with **16 opto-isolated digital input channels**. The voltage high-level can be in the range of 2.5...60V (specifications see page 39). For each channel the positive and negative input is connected with the clamp. The 4 channels of a clamp are combined in a group. For status control one LED per channel is assembled after the input buffer. Depending on the I/O-board further signals are feed-through to the 25-pin D-Sub female connector ST2 (see table 5).

For the inputs the following assignment is valid:

	Input 1...8	Input 9...16	ST2
ME-1000	Px0...7	Px8...15	Px16...31
ME-1400(A/B)	PA0...7	PB0...7	PC0...7 counter 0...2 (only ME-1400A/B)
ME-630 series	DIO_C0...7	DIO_D0...7	--
ME-4600 series	DIO_C0...7	DIO_D0...7	--
ME-6000 series	DIO_A0...7	DIO_B0...7	--

Table 5: Controlling the ME-632

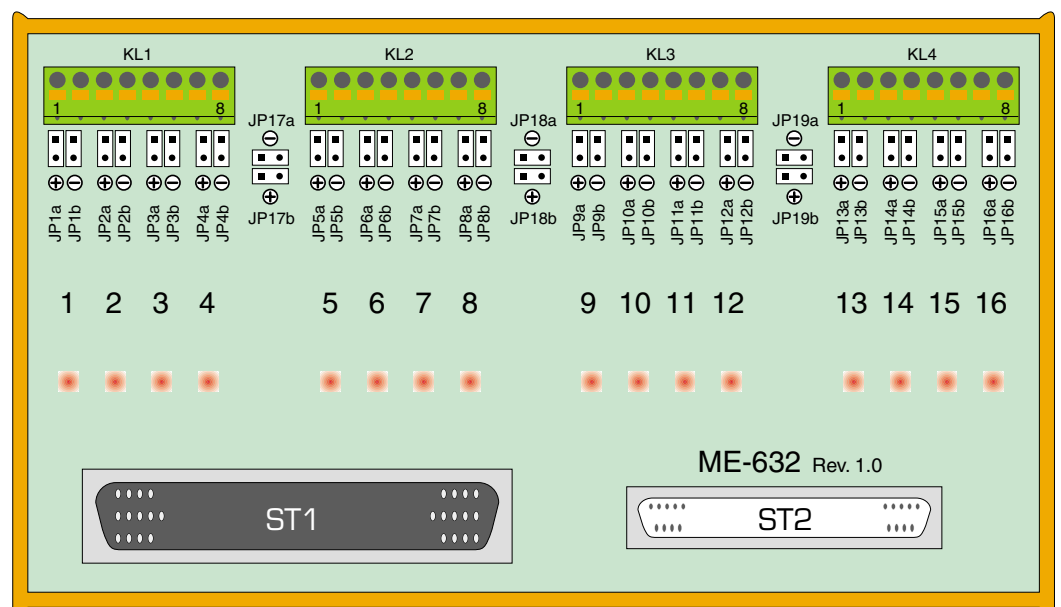


Diagram 4: ME-632

2.2.1 Block Diagram

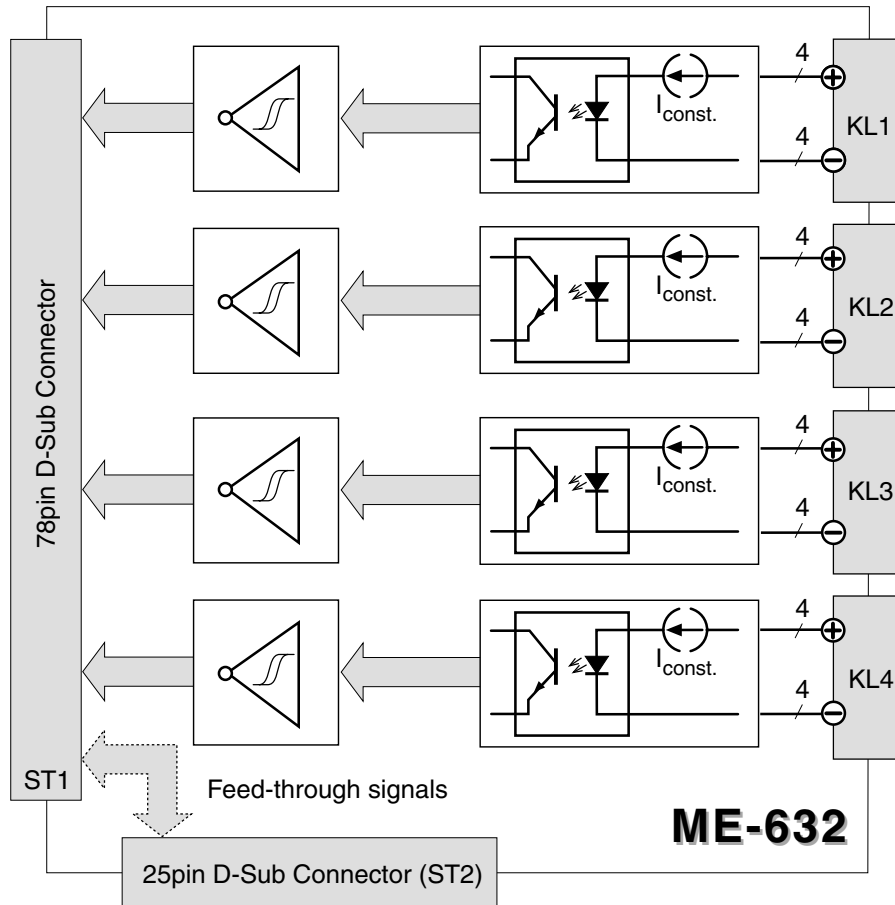


Diagram 5: Block diagram ME-632

2.2.2 Jumper Settings

By jumper a common reference can be made between the involved channels of a group (see diagram 6).

The input channels can be referred alternatively to a positive reference voltage or to a common ground. For every channel, which should be referred to a positive reference, the corresponding jumper JP_xa must be set. For every channel, which should be referred to ground, the corresponding jumper JP_xb must be set. For example: if the jumpers JP1a and JP3a are set you can connect the positive reference of group KL1 to the clamps KL1.1 or KL1.5.

Please note, out of each pair of jumpers only one jumper (e. g. JP1a, JP1b) may be set!

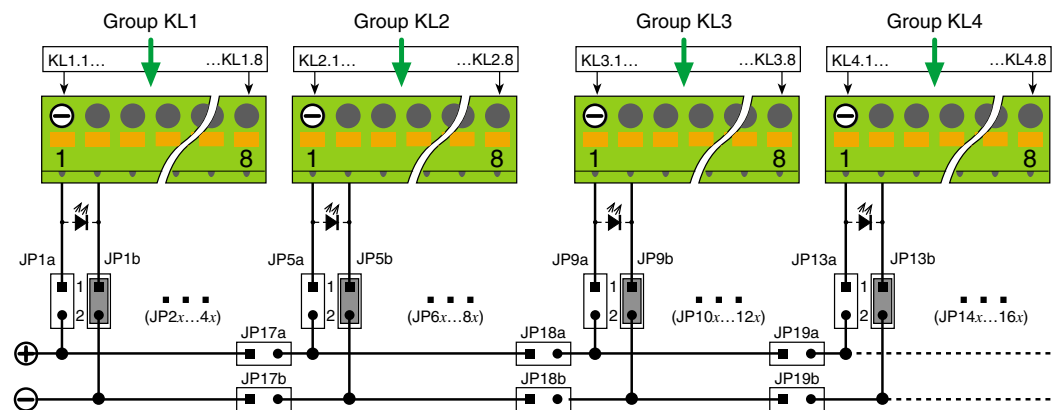


Diagram 6: Jumper ME-632

If required, alternatively the positive references (JP17a, JP18a, JP19a) or the ground references (JP17b, JP18b, JP19b) of adjacent groups can be connected with each another.

2.2.3 Pinout

Clamping block	Pin	Signal	Clamping block	Pin	Signal
KL1	1	Input 1, positive	KL2	1	Input 5, positive
	2	Input 1, negative		2	Input 5, negative
	3	Input 2, positive		3	Input 6, positive
	4	Input 2, negative		4	Input 6, negative
	5	Input 3, positive		5	Input 7, positive
	6	Input 3, negative		6	Input 7, negative
	7	Input 4, positive		7	Input 8, positive
	8	Input 4, negative		8	Input 8, negative
KL3	1	Input 9, positive	KL4	1	Input 13, positive
	2	Input 9, negative		2	Input 13, negative
	3	Input 10, positive		3	Input 14, positive
	4	Input 10, negative		4	Input 14, negative
	5	Input 11, positive		5	Input 15, positive
	6	Input 11, negative		6	Input 15, negative
	7	Input 12, positive		7	Input 16, positive
	8	Input 12, negative		8	Input 16, negative

Table 6: Pinout ME-632

2.3 ME-633

The **ME-633** is an external extension board with **16 opto-isolated digital output channels**. The outputs are designed as open collector outputs and can switch up to 60V (specifications see page 41). For each channel the positive and negative output is connected with the clamp. The 4 channels of a clamp are combined in a group. For status control one LED per channel is assembled before the opto-isolation. Depending on the I/O-board further signals are feed-through to the 25-pin D-Sub female connector ST2 (see table 7).

For the outputs the following assignment is valid:

	Output 1...8	Output 9...16	ST2
ME-1000	Px0...7	Px8...15	Px16...31
ME-1400(A/B)	PA0...7	PB0...7	PC0...7 counter 0...2 (only ME-1400A/B)
ME-630 series	DIO_C0...7	DIO_D0...7	--
ME-4600 series	DIO_C0...7	DIO_D0...7	--
ME-6000 series	DIO_A0...7	DIO_B0...7	--

Table 7: Controlling the ME-633

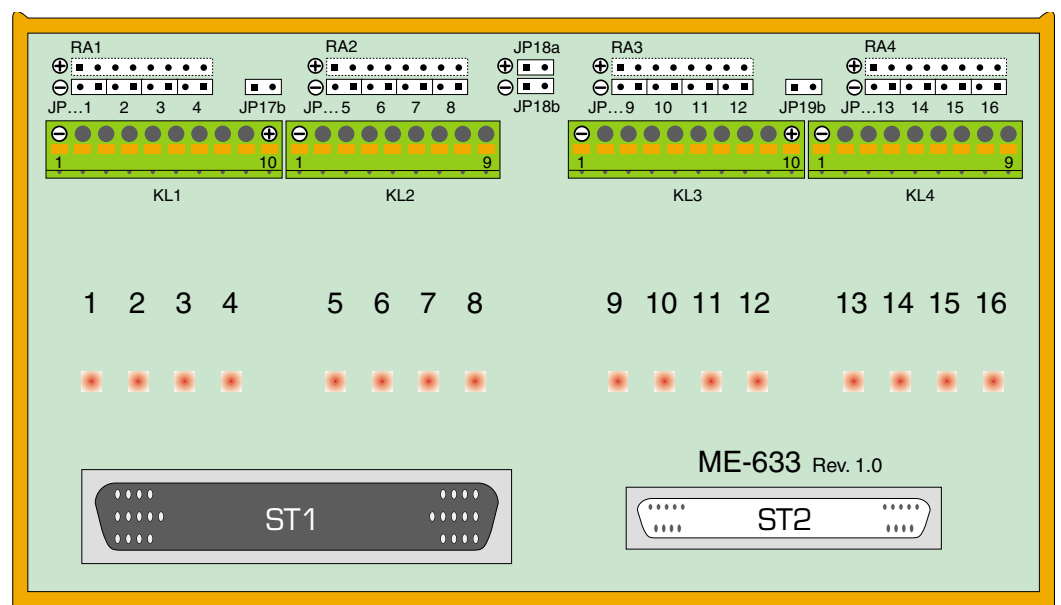


Diagram 7: ME-633

2.3.1 Block Diagram

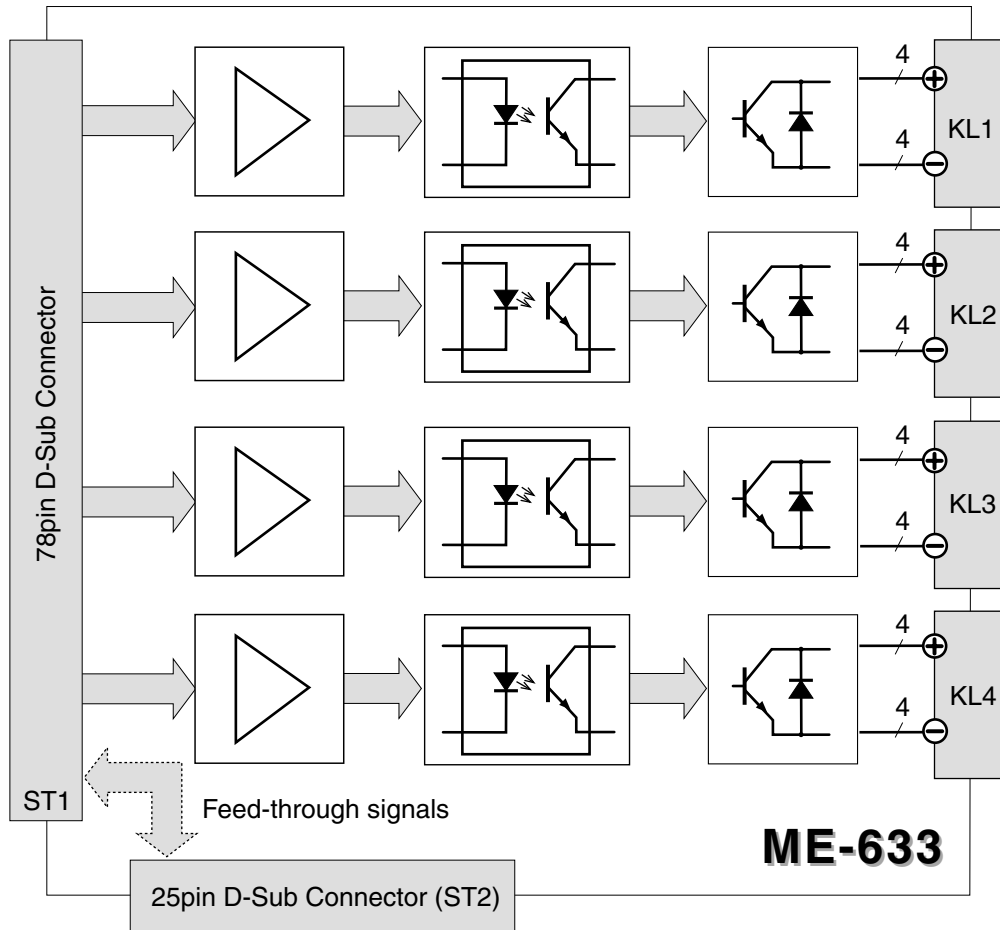


Diagram 8: Blocks diagram ME-633

2.3.2 Jumper Settings

By jumper a common reference can be made between the involved channels of a group (see diagram 9).

For the output channels a common ground can be defined for each group. For every channel, which should be referred to it, the corresponding jumper JPx must be set. By the clamps KLx.1 the ground reference for each group must be done. For example: if the jumpers JP1 and JP4 are set you can connect the ground reference of group KL1 to the clamp KL1.1.

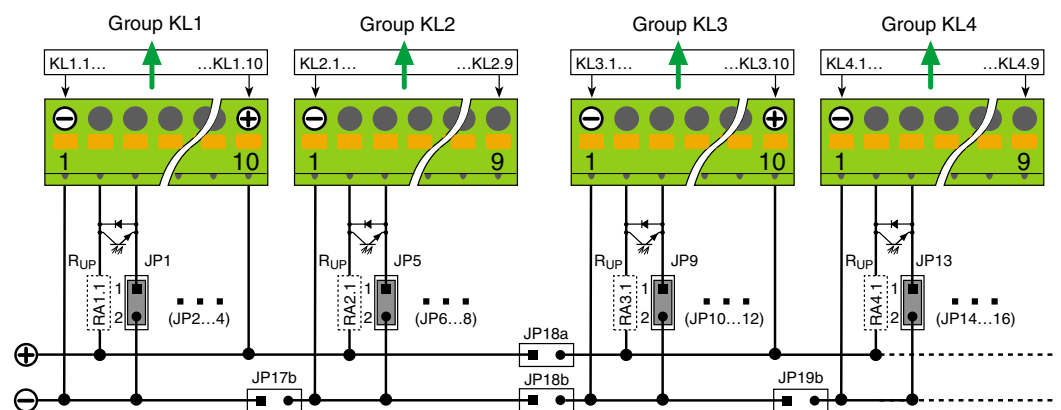


Diagram 9: Jumper ME-633

If required, the grounds of adjacent groups (JP17a, JP18a, JP19a) can be connected with each another. Additionally the positive references between the groups KL2 and KL3 (JP18a) can be connected.

2.3.3 Pullup Resistors

As pullup resistors R_{UP} (see diagram 9) resistor arrays with 4 separate resistors come with the package.

If you want to use pullup resistors a positive reference for the groups KL1 and KL2 must be done by clamp KL1.10. For the groups KL3 and KL4 a positive reference must be done by clamp KL3.10. If necessary you can use different resistor values for each channel.

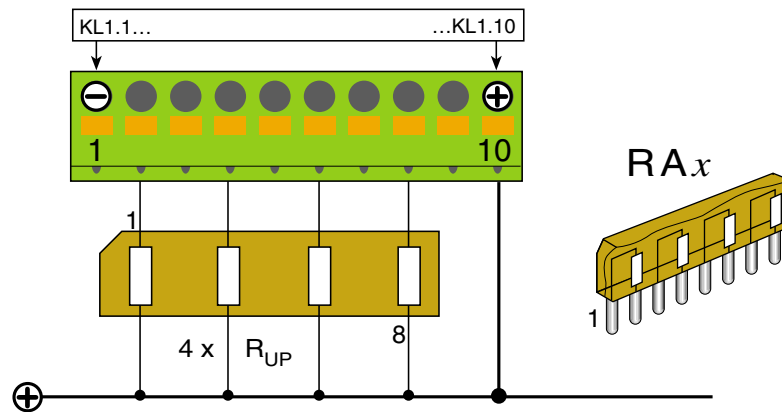


Diagram 10: Pullup resistors

2.3.4 Pinout

Clamping block	Pin	Signal	Clamping block	Pin	Signal
KL1	1	Ground KL1	KL2	1	Ground KL2
	2	Output 1, positive		2	Output 5, positive
	3	Output 1, negative		3	Output 5, negative
	4	Output 2, positive		4	Output 6, positive
	5	Output 2, negative		5	Output 6, negative
	6	Output 3, positive		6	Output 7, positive
	7	Output 3, negative		7	Output 7, negative
	8	Output 4, positive		8	Output 8, positive
	9	Output 4, negative		9	Output 8, negative
	10	positive reference KL1 and KL2			
KL3	1	Ground KL3	KL4	1	Ground KL4
	2	Output 9, positive		2	Output 13, positive
	3	Output 9, negative		3	Output 13, negative
	4	Output 10, positive		4	Output 14, positive
	5	Output 10, negative		5	Output 14, negative
	6	Output 11, positive		6	Output 15, positive
	7	Output 11, negative		7	Output 15, negative
	8	Output 12, positive		8	Output 16, positive
	9	Output 12, negative		9	Output 16, negative
	10	positive reference KL3 and KL4			

Table 8: Pinout ME-633

2.4 ME-634

The **ME-634** is an external extension board with **8 opto-isolated digital output channels and 8 opto-isolated digital input channels**. The outputs are designed as open collector outputs and can switch up to 60V. The voltage high-level of the inputs can be in the range of 2.5...60V (specifications see page 43). For each channel the positive and negative input resp. output is connected with the clamp. The 4 channels of a clamp are combined in a group. For status control one LED per channel is assembled. Depending on the I/O-board further signals are feed-through to the 25-pin D-Sub female connector ST2 (see table 9).

For the inputs resp. outputs the following assignment is valid:

	Output 1...8	Input 9...16	ST2
ME-1000	Combination not possible		
ME-1400(A/B)	PA0...7	PB0...7	PC0...7 counter 0...2 (only ME-1400A/B)
ME-630 series	DIO_C0...7	DIO_D0...7	--
ME-4600 series	DIO_C0...7	DIO_D0...7	--
ME-6000 series	DIO_A0...7	DIO_B0...7	--

Table 9: Controlling the ME-634

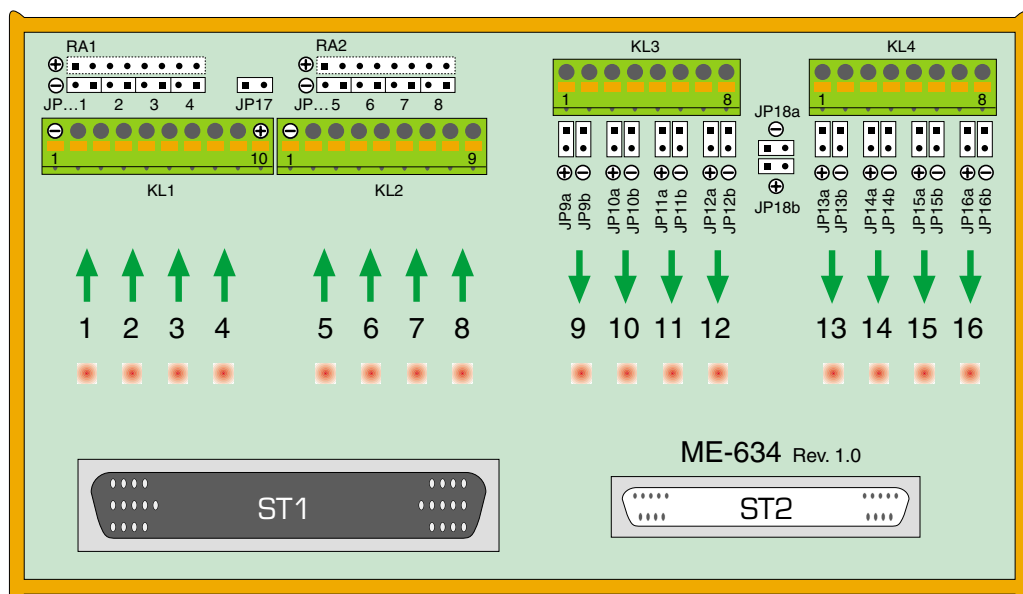


Diagram 11: ME-634

2.4.1 Block Diagram

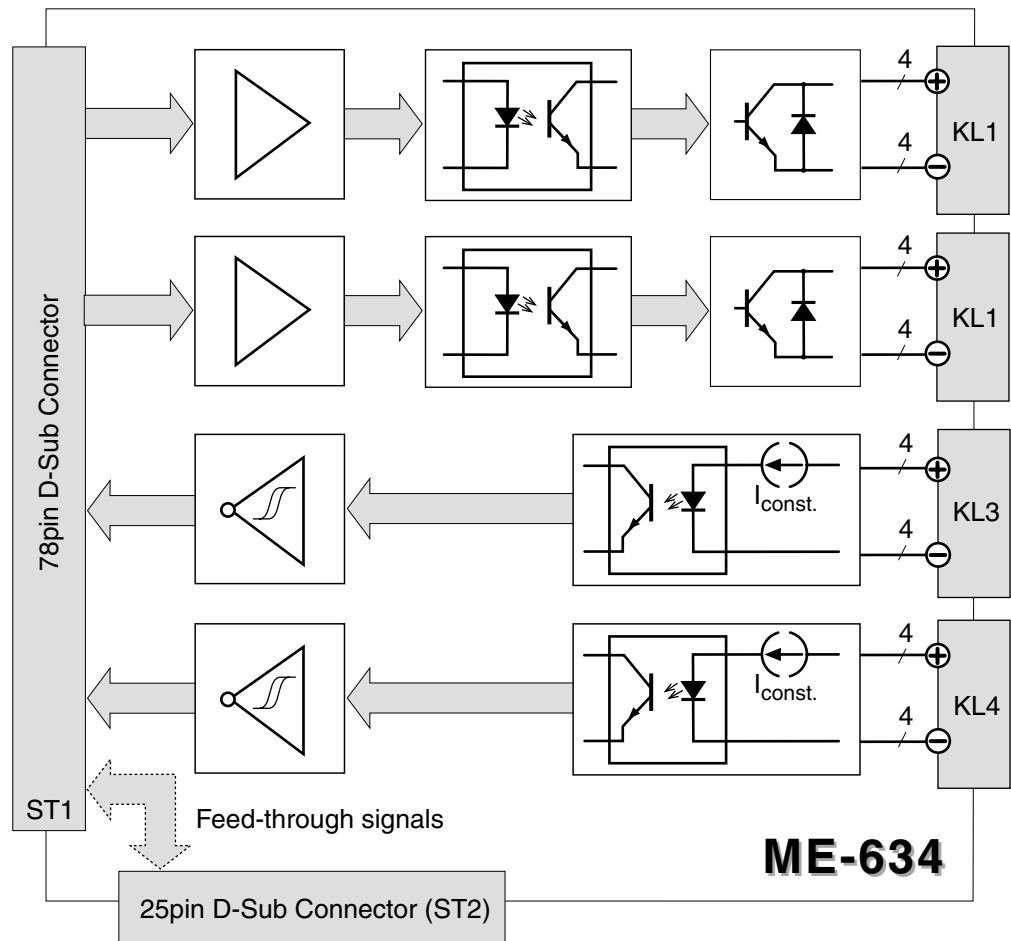


Diagram 12: Block diagram ME-634

2.4.2 Jumper Settings

By jumper a common reference can be made between the involved channels of a group (see diagram 13).

For the **output channels** a common ground can be defined for each group (KL1 resp. KL2). For every channel, which should be referred to it, the corresponding jumper JP x must be set. By the clamps KL1.1 resp. KL2.1 the ground reference for each group must be done. For example: if the jumpers JP1 and JP4 are set you can connect the ground reference of group KL1 to the clamp KL1.1.

The **input channels** can be referred alternatively to a positive reference voltage or to a common ground. For every channel, which should be referred to a positive reference, the corresponding jumper JP x _a must be set. For every channel, which should be referred to ground, the corresponding jumper JP x _b must be set. For example: if the jumpers JP13_b and JP16_b are set you can connect the ground reference of group KL4 to the clamps KL4.2 or KL4.8.

Please note, out of each pair of jumpers JP x _a,_b only one jumper may be set!

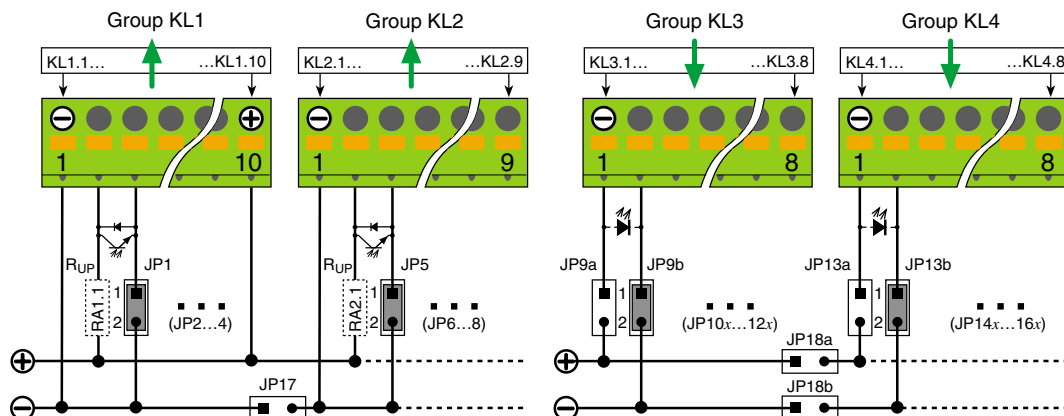


Diagram 13: Jumper ME-634

If required, the grounds of group KL1 and KL2 (JP17) can be connected. Additionally the positive references (JP18_a) or the ground references (JP18_b) of KL3 and KL4 can be connected with each another.

2.4.3 Pullup Resistors

As pullup resistors R_{UP} for the output channels (see diagram 14) resistor arrays with 4 separate resistors come with the package.

If you want to use pullup resistors a positive reference for the groups KL1 and KL2 must be done by clamp KL1.10. If necessary you can use different resistor values for each channel.

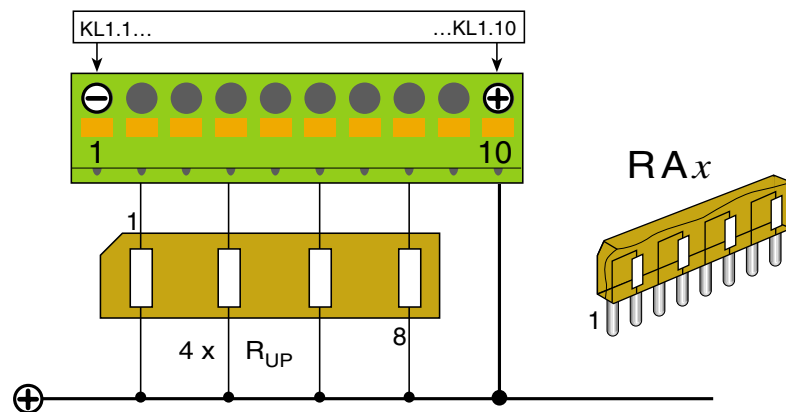


Diagram 14: Pullup resistors

2.4.4 Pinout

Clamping block	Pin	Signal	Clamping block	Pin	Signal
KL1	1	Ground KL1	KL2	1	Ground KL2
	2	Channel 1 (Output), positive		2	Channel 5 (Output), positive
	3	Channel 1 (Output), negative		3	Channel 5 (Output), negative
	4	Channel 2 (Output), positive		4	Channel 6 (Output), positive
	5	Channel 2 (Output), negative		5	Channel 6 (Output), negative
	6	Channel 3 (Output), positive		6	Channel 7 (Output), positive
	7	Channel 3 (Output), negative		7	Channel 7 (Output), negative
	8	Channel 4 (Output), positive		8	Channel 8 (Output), positive
	9	Channel 4 (Output), negative		9	Channel 8 (Output), negative
	10	positive reference KL1 and KL2			
KL3	1	Channel 9 (Input), positive	KL4	1	Channel 13 (Input), positive
	2	Channel 9 (Input), negative		2	Channel 13 (Input), negative
	3	Channel 10 (Input), positive		3	Channel 14 (Input), positive
	4	Channel 10 (Input), negative		4	Channel 14 (Input), negative
	5	Channel 11 (Input), positive		5	Channel 15 (Input), positive
	6	Channel 11 (Input), negative		6	Channel 15 (Input), negative
	7	Channel 12 (Input), positive		7	Channel 16 (Input), positive
	8	Channel 12 (Input), negative		8	Channel 16 (Input), negative

Table 10: Pinout ME-634

2.5 ME-635

The **ME-635** is an external **relay board with 16 solid-state relays**. The relays can switch up to 5 A/240 VAC (specifications see page 43). An automatic detection of zero-axis crossing guarantees that the load is always switched on zero-axis crossing of your signal. However phase synchronized switching is not possible with the ME-635. For status control one LED per channel is assembled. Depending on the I/O-board further signals are feed-through to the 25-pin D-Sub female connector ST2 (see table 11).

For controlling the relays the following assignment is valid:

	Relays 1...8	Relays 9...16	ST2
ME-1000	Px0...7	Px8...15	Px16...31
ME-1400(A/B)	PA0...7	PB0...7	PC0...7 counter 0...2 (only ME-1400A/B)
ME-630 series	DIO_C0...7	DIO_D0...7	--
ME-4600 series	DIO_C0...7	DIO_D0...7	--
ME-6000 series	DIO_A0...7	DIO_B0...7	--

Table 11: Controlling the ME-635

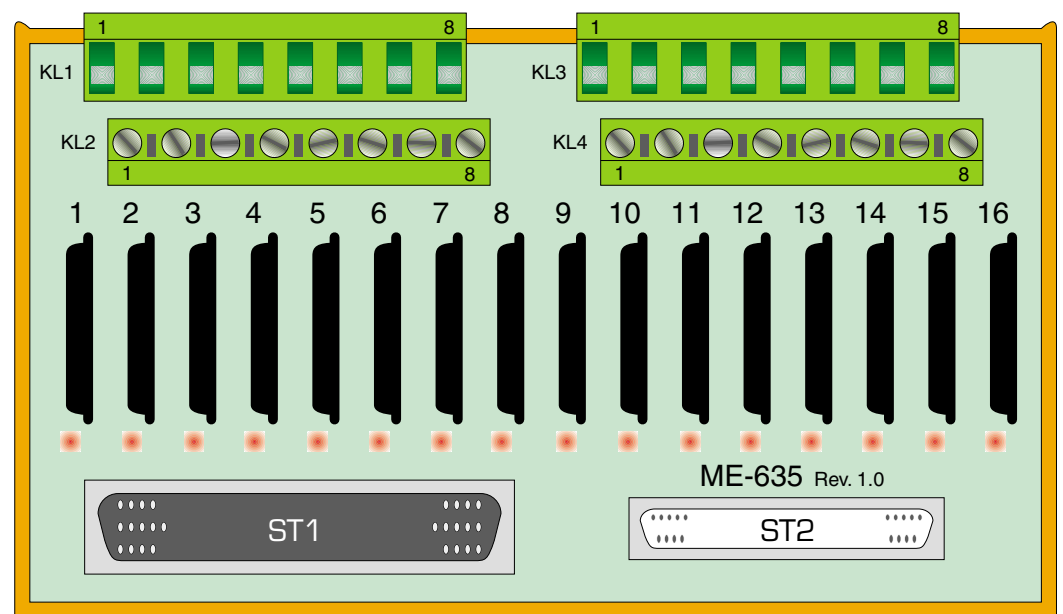


Diagram 15: ME-635

2.5.1 Block Diagram

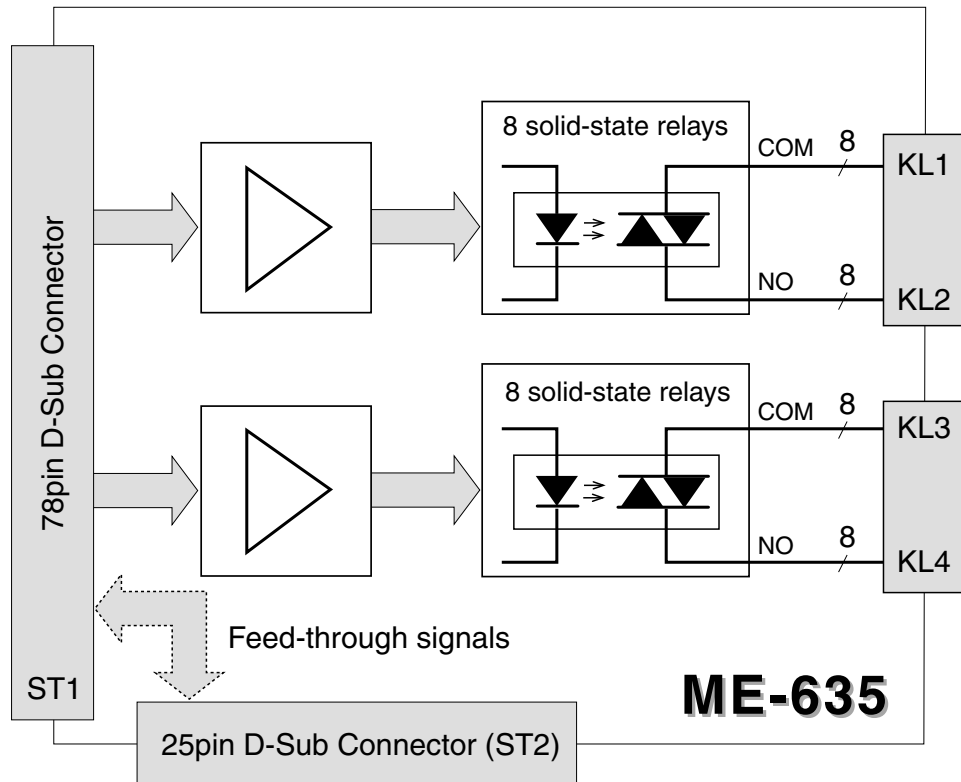


Diagram 16: Block diagram ME-635

2.5.2 Pinout

Clamping block	Pin	Signal	Clamping block	Pin	Signal
KL1	1	Relay 1, COM	KL2	1	Relay 1, NO
	2	Relay 2, COM		2	Relay 2, NO
	3	Relay 3, COM		3	Relay 3, NO
	4	Relay 4, COM		4	Relay 4, NO
	5	Relay 5, COM		5	Relay 5, NO
	6	Relay 6, COM		6	Relay 6, NO
	7	Relay 7, COM		7	Relay 7, NO
	8	Relay 8, COM		8	Relay 8, NO
KL3	1	Relay 9, COM	KL4	1	Relay 9, NO
	2	Relay 10, COM		2	Relay 10, NO
	3	Relay 11, COM		3	Relay 11, NO
	4	Relay 12, COM		4	Relay 12, NO
	5	Relay 13, COM		5	Relay 13, NO
	6	Relay 14, COM		6	Relay 14, NO
	7	Relay 15, COM		7	Relay 15, NO
	8	Relay 16, COM		8	Relay 16, NO

Table 12: Pinout ME-635

NO: „Normally Open“

COM: „Common“

2.6 Connection Options

For the connection of the ME-63Xtend series to the ME-1000, ME-1400, ME-630, ME-4600 series and ME-6000 series ready-made cables are available as accessories from Meilhaus Electronic (see the following chapters).

Using individual connection cables the ME-63Xtend series can also be connected to many multi-I/O and digital-I/O boards. The I/O board requires at least two 8 bit TTL input resp. output ports.

2.6.1 Connection to ME-1000

By a special connection cable of type ME AK-D78/1000 two ME-63Xtend boards can be connected to a ME-1000/64 directly. If you are using a ME-1000/128: with one more connection cable of type ME AK-D78/1000 two additional ME-63Xtend boards can be connected to the ME-1001.

With up to 4 special connection cables ME AK-D2578/1000 you can connect one more ME-63Xtend board to the previous ME-63Xtend board (ST2) in daisy-chain operation. (Note: Only one additional board can be connected).

With that you can control up to four ME-63Xtend boards (64 channels) with one ME-1000/64 and up to eight ME-63Xtend boards (128 channels) with one ME-1000/128. Of course smaller extension boards are also possible.

Please note, that the digital I/O lines of the ME-1000 are organized in 32 bit wide ports, which can be configured for input or output by port only. Because of this the ME-634 can not be used in combination with the ME-1000. ME-X63tend boards used in daisy chain configuration must be of type input (ME-632) or output (ME-631/633/635).

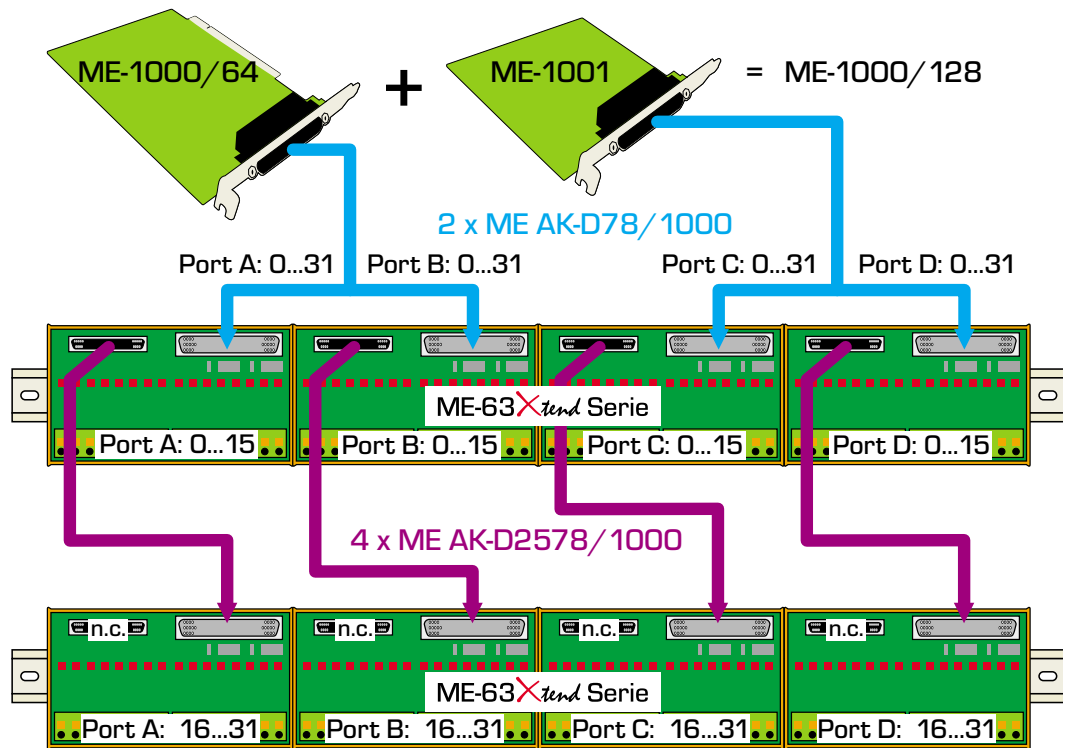


Diagram 17: Connection to ME-1000

2.6.2 Connection to ME-1400

By a 1:1 connection cable of type ME AK-D78 (or ME-AK-D78/1) a ME-63Xtend board can be connected to a ME-1400(A/B) directly.

The 8 bit port C as well as the counters 0...2 (not on ME-1400) are feed-through to the 25pin D-Sub connector (ST2). On demand you can use a connection block (ME AB-D25M) and a 25pin D-Sub cable (ME AK-D25).

Basically the boards of the ME-63Xtend series can also be used with the ME-1400B. However the digital ports D, E and F as well as the counters 3...5 are not feed-through to the 25pin D-Sub connector.

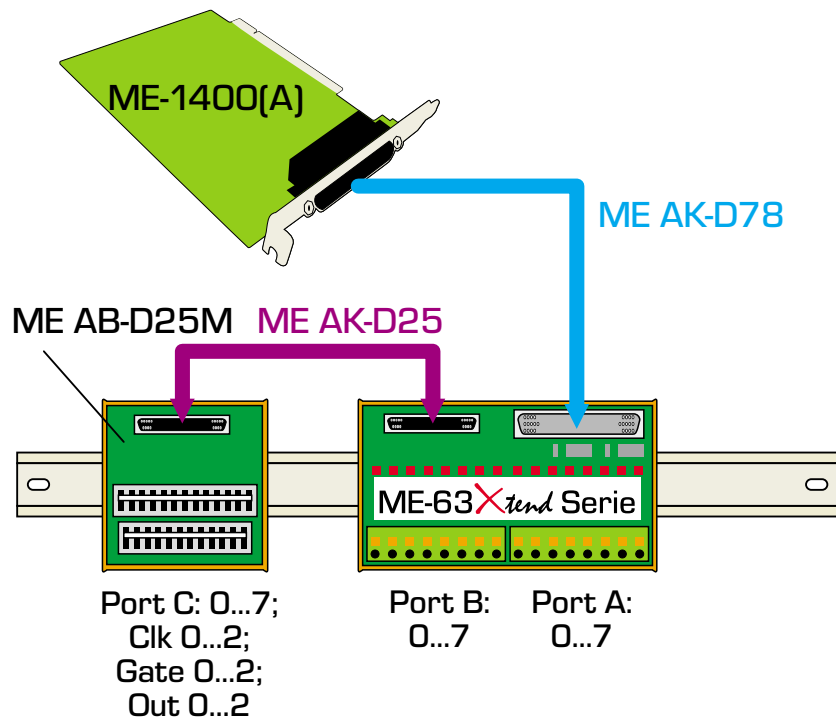


Diagram 18: Connection to ME-1400

2.6.3 Connection to ME-Boards with extra port

Connect the boards of the ME-63Xtend series to the bi-directional TTL ports (ST2) of the ME-630 series, ME-4600 series and ME-6000 series. The extra mounting bracket ME AK-D25F/S included with the package must be installed (see manual of the board). With the special connection cable ME AK-D2578/4000 the ME-63Xtend board is connected to the 25pin D-Sub jack of the extra mounting bracket (ME-630 USB: direct connection to the 25pin D-Sub connector of the device).

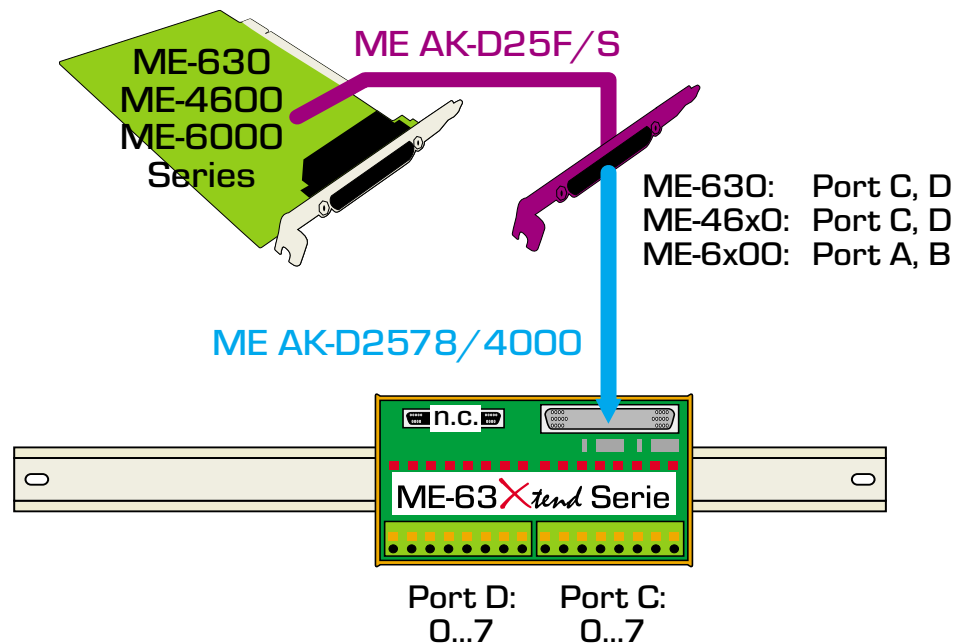


Diagram 19: Connection to extra port

Note: To the 25pin D-Sub connector (ST2) of the ME-63Xtend series no further signals are attached with exception of VCC and ground (see diagram 21).

Appendix

A Pinouts

A1 Pinout ST1

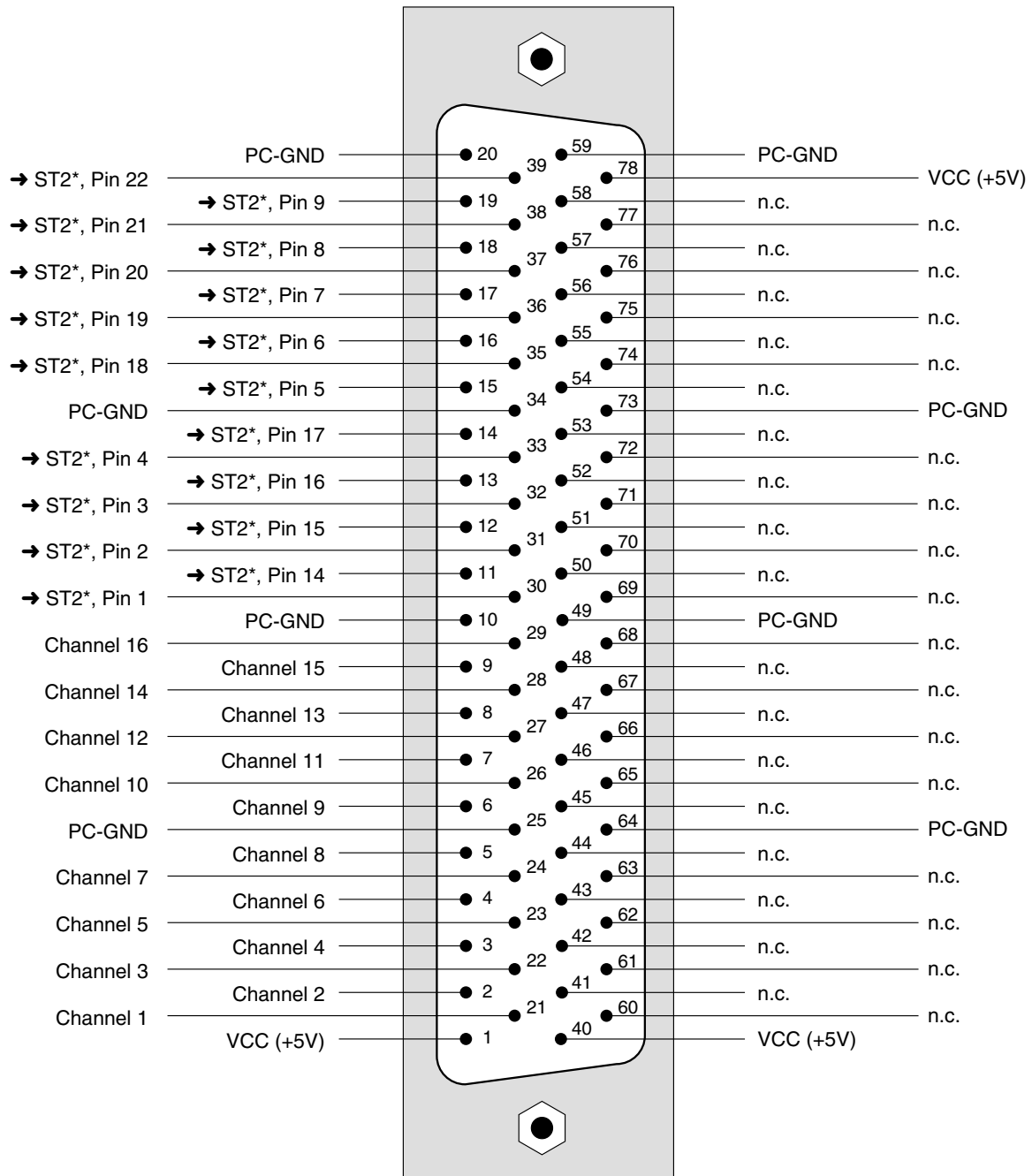


Diagram 20: Pinout 78pin D-Sub connector ST1

Please note chapter 2.6 "Connection Options" on page 30!

A2 Pinout ST2

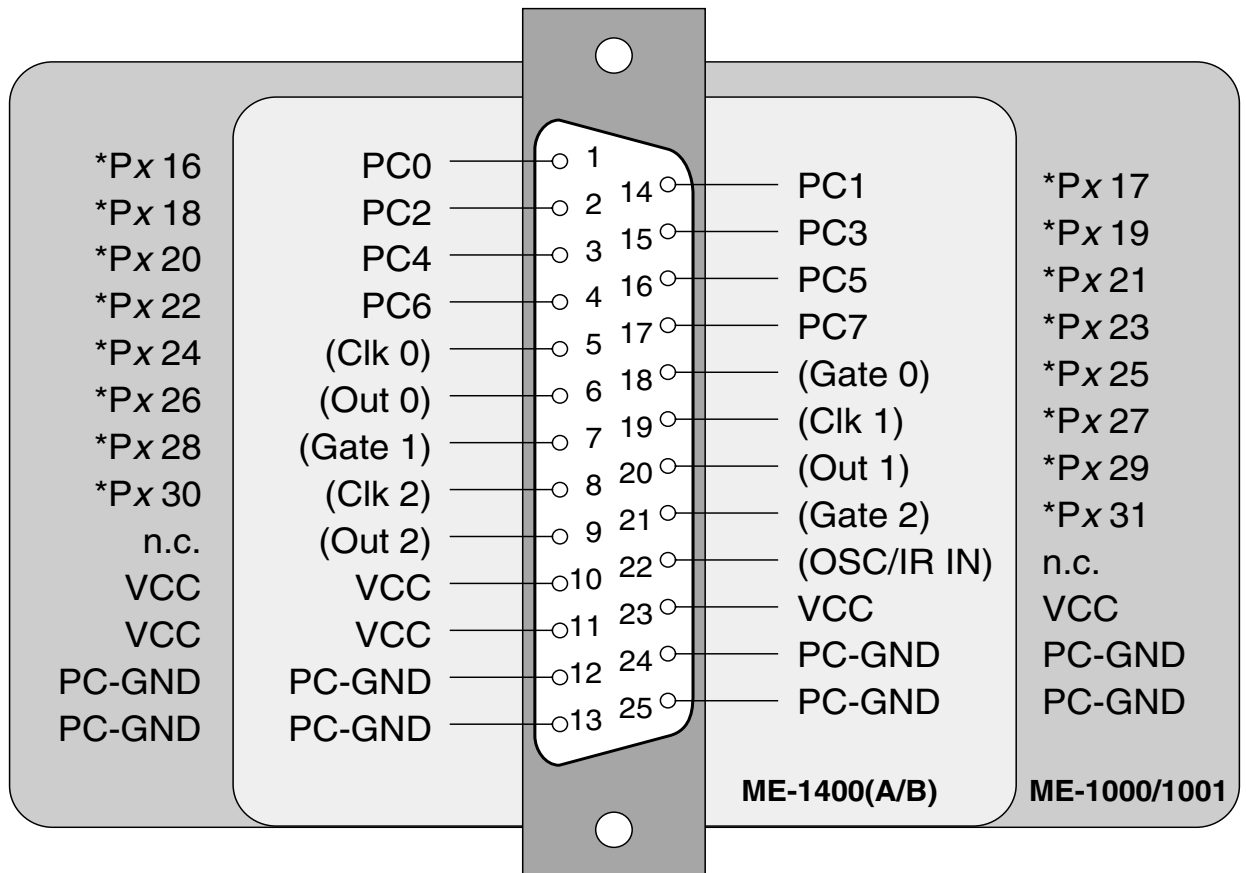


Diagram 21: Pinout of the 25pin D-Sub connector ST2

Note for boards of ME-630, ME-4600 and ME-6000 series: To the 25pin D-Sub connector (ST2) of the ME-63Xtend series no further signals are attached with exception of VCC and ground (see also diagram 19).

***„Daisy-Chain“ operation with the ME-1000:**

If you connect a second board of the ME-63Xtend series to the 25pin D-Sub connector ST2 using the special connection cable ME AK-D2578/1000 the digital I/Os Px16...31 of each port (A, B, C, D) are attached (see also chapter 2.6 "Connection Options" on page 30).

Condition is using the special connection cable ME AK-D78/1000 to connect boards of the ME-63Xtend series to the ME-1000/64 (up to 64 channels) resp. ME-1000/128 (up to 128 channels).

Note: ME-1000/64 + ME-1001 = ME-1000/128.

B Specifications

B1 ME-63Xtend Series (all models)

General Specifications

Physical size (without mounting kit)	160 x 100 mm
Mounting	DIN Rail Mounting Kit included
Connectors	78pin D-Sub female connector (to I/O board), 25pin D-Sub female connector (for feed through signals), detachable clamping blocks for inputs and outputs
Operating temperature	0...70 °C
Storage temperature	0...50°C
Relative humidity	20...55% (non condensing)

CE Certification

EMC Directive	89/336/EMC
Emission	EN 55022
Noise immunity	EN 50082-2

B2 ME-631

Number of relays 16 Form C relays
Relay type Nais APE3014H

Note: The index „out“ refers to the clamps KL1...6; the index „in“ refers to the 78pin D-Sub female connector.

Maximum Ratings

Conditions: $T_A=25^\circ\text{C}$

Measurement Values	Test Conditions	MIN	MAX	Unit
Operating voltage U_b	non destructive	-0,5	+8	V
Input voltage U_{in}	non destructive	-0,5	30	V
Switching voltage U_{out}	non destructive		400	V_{AC}
Switching voltage U_{out}	non destructive		300	V_{DC}
Permanent current $I_{out, max}$	non destructive		6	A
Switching power	non destructive, $\cos\varphi=1$		1500	VA
Isolation voltage coil/contact U_{ISO}			4000	$V_{AC,rms}$
Isolation voltage contact/contact U_{Off}			1000	$V_{AC,rms}$

Recommended Operating Conditions

Conditions: $U_b=5V\pm 10\%$, $T_A=25^\circ\text{C}$

Measurement Values	Test Conditions	MIN	Typ	MAX	Unit
U_b			5		V
U_{out}	$I_{out} = I_{out, max}$	$12^{1)}$		250	V_{AC}
U_{out}	$I_{out} = I_{out, max}$	$12^{1)}$		30	V_{DC}
I_{out}	time unlimited, all channels	$0,1^{1)}$		6	A

¹⁾ on small load the life time of contacts is decreasing.

Static Values

Conditions: $U_b=5V\pm 10\%$, $T_A=25^\circ C$

Measurement Values	Test Conditions	MIN	Typ	MAX	Unit
$U_{in,H}$		3,5		$U_b - 0,6$	V
$U_{in,L}$				1,5	V
$I_{in,H}$	$U_{in}=3,85V$		0,93	1,35	mA

Dynamic Values

Conditions: $U_b=5V\pm 10\%$, $T_A=25^\circ C$

Measurement Values	Test Conditions	MIN	Typ	MAX	Unit
f_{in}	without load			20	Hz
$t_{pd,on}$			5	8	ms
$t_{pd,off}$			2,5	4	ms
Contact life time	$I_{out}=6A$, $U_{out}=250VAC$, $\cos\phi=1$	3×10^4		5×10^6	

B3 ME-632

Inputs 16 digital inputs
 Opto-isolation up to 2500 VDC

Note: The index „in“ refers to the clamps KL1...4; the index „out“ refers to the 78pin D-Sub female connector.

Maximum Ratings

Conditions: $T_A=25^\circ\text{C}$

Measurement Values	Test Conditions	MIN	MAX	Unit
Operating voltage U_b	non destructive	-0,5	+7	V
Input voltage U_{in}	non destructive	-5	70	V
I_{out}	non destructive, 1 channel	-60	+150	mA
U_{ISO}	f=60Hz, t=1min		2500	$V_{AC,rms}$

Recommended Operating Conditions

Conditions: $U_b=5V\pm 10\%$, $T_A=25^\circ\text{C}$

Measurement Values	Test Conditions	MIN	Typ	MAX	Unit
U_{in}		0		60	V
I_{out}	t=1s, 1 channel	± 60	± 115	± 200	mA

Static Values

Conditions: $U_b=5V\pm 10\%$, $T_A=25^\circ\text{C}$

Measurement Values	Test Conditions	MIN	Typ	MAX	Unit
$U_{in,H}$		2,30		60	V
$U_{in,L}$		0		2,20	V
$U_{out,H}$	$I_{out}=-24\text{mA}$, $U_b=4,5\text{V}$	2,4	3,3		V
$U_{out,L}$	$I_{out}=24\text{mA}$, $U_b=4,5\text{V}$		0,3	0,55	V
R_{in}	$U_{in}=24\text{V}$		4,3		$k\Omega$
I_{in}	$U_{in} = 60\text{V}$		6,5	10	mA

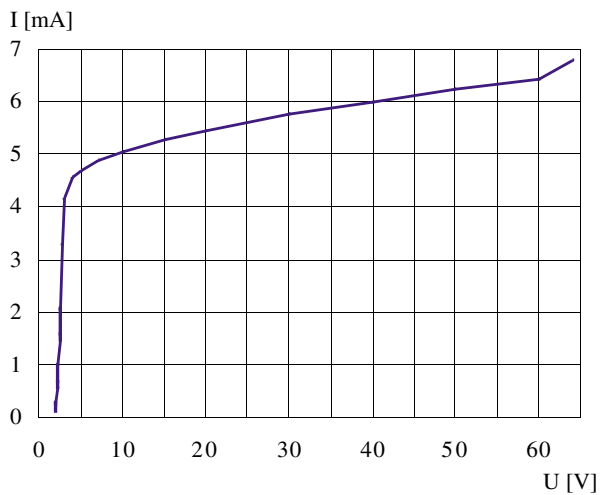
Dynamic Values

Conditions: $U_b=5V\pm 10\%$, $T_A=25^\circ C$

Measurement Values	Test Conditions	MIN	Typ	MAX	Unit
f_{in}	Output switching, duty cycle 12%, $U_{in}=10V$		23		kHz
f_{in}	Output switching, duty cycle 50%, $U_{in}=10V$		10,5		kHz
f_{in}	Output switching, duty cycle 50%, $U_{in}=2,35V$		62		kHz
$t_{pd,HL}$	$f_{in}=1kHz$, $U_{in}=10V$		36		μs
$t_{pd,LH}$	$f_{in}=1kHz$, $U_{in}=10V$		1,9		μs

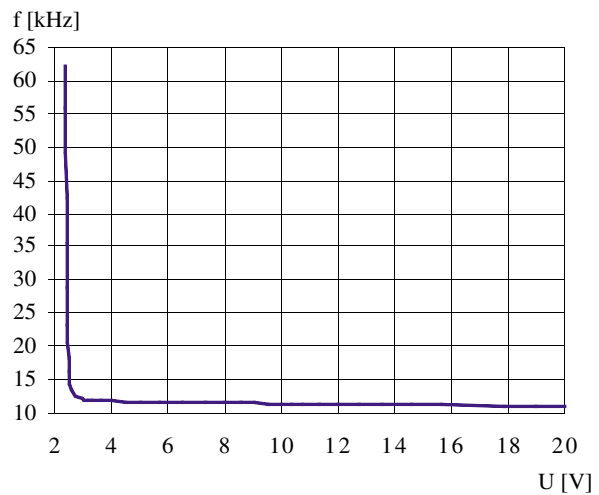
Input current related to input voltage

$T_A=25^\circ C$, $U_b=5,0V$, $f=0Hz$



Maximum input frequency related to input voltage

$T_A=25^\circ C$, $U_b=5,0V$, output switching



B4 ME-633

Outputs 16 digital outputs
 Opto-isolation up to 2500 VDC

Note: The index „out“ refers to the clamps KL1...4; the index „in“ refers to the 78pin D-Sub female connector.

Maximum Ratings

Conditions: $T_A=25^\circ\text{C}$

Measurement Values	Test Conditions	MIN	MAX	Unit
Operating voltage U_b	non destructive	-0,5	+7	V
Input voltage U_{in}	non destructive	-0,5	$U_b + 0,5$	V
U_{out}	non destructive	-0,8	70	V
I_{out}	non destructive, t=10s	-200	1000	mA
U_{ISO}	f=60Hz, t=1min		2500	$V_{AC,rms}$

Recommended Operating Conditions

Conditions: $U_b=5V\pm 10\%$, $T_A=25^\circ\text{C}$

Measurement Values	Test Conditions	MIN	Typ	MAX	Unit
U_{out}	$I_{out, on} > 100\mu\text{A}$	0,6		60	V
I_{out}	time limited, all channels	0		300	mA
$I_{out, peak}$	t=1min, 1 channel			400	mA

Static Values

Conditions: $U_b=5V\pm 10\%$, $T_A=25^\circ\text{C}$

Measurement Values	Test Conditions	MIN	Typ	MAX	Unit
$U_{in,H}$		2			V
$U_{in,L}$				0,8	V
$U_{out,on}$	$I_{out}=100\text{mA}$		0,86		V
$U_{out,on}$	$I_{out}= I_{out, max}$	1,00	1,03	1,2	V
R_{on}		3	10	700	$\text{m}\Omega$
R_{off}	$U_{out} = U_{out, max}$		600		$\text{M}\Omega$

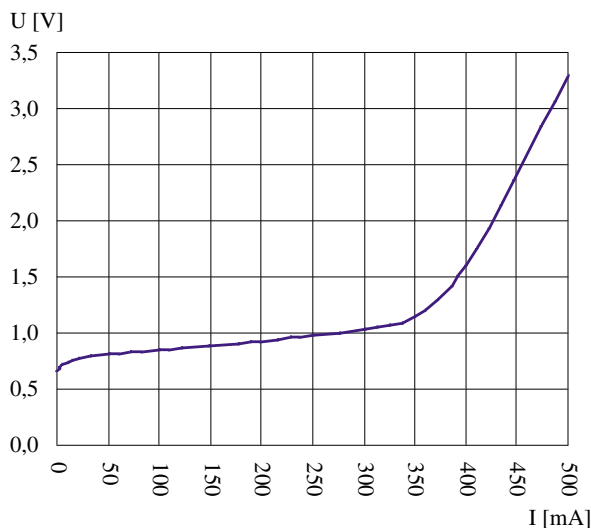
Dynamic Values

Conditions: $U_b=5V\pm 10\%$, $T_A=25^\circ C$

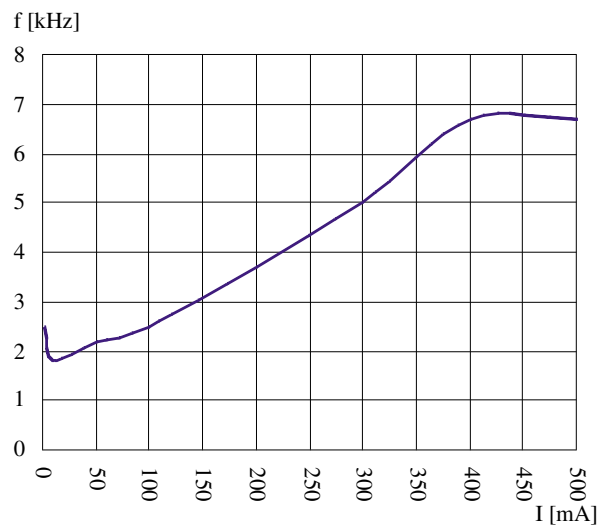
Measurement Values	Test Conditions	MIN	Typ	MAX	Unit
f_{in}	$U_{out}=90\%$, $I_{out}=100mA$	5,0	5,5	5,7	kHz
$t_{pd,HL}$	$I_{out}=100mA$, $f_{out}=1kHz$		90		μs
$t_{pd,LH}$	$I_{out}=100mA$, $f_{out}=1kHz$		2,2		μs
$t_{tr,HL}$	$I_{out}=100mA$, $f_{out}=1kHz$		1,4		μs
$t_{tr,LH}$	$I_{out}=100mA$, $f_{out}=1kHz$		62		μs

Forward voltage related to load current

$T_A=25^\circ C$, $U_b=5,0V$, $f=0Hz$



Maximum input frequency related to load current, $T_A=25^\circ C$, $U_b=4,5V$, $\Delta U=1\%$



B5 ME-634

Inputs	8 digital inputs
Outputs	8 digital outputs
Opto-isolation	up to 2500 VDC

- Specifications of the input channels see ME-632 on page 39.
- Specifications of the output channels siehe ME-633 on page 41.

B6 ME-635

Anzahl Relais	16 Halbleiter-Relais
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Note: The index „out“ refers to the clamps KL1...4; the index „in“ refers to the 78pin D-Sub female connector.

Maximum Ratings

Conditions: $T_A=25^\circ\text{C}$

Measurement Values	Test Conditions	MIN	MAX	Unit
Operating voltage U_b	non destructive	-0,5	+8	V
Input voltage U_{in}	non destructive	-0,5	30	V
Switching voltage U_{out}	non destructive		280	$V_{AC,rms}$
Switching voltage $U_{out,max}$	transient		600	V_{pp}
Permanent current I_{out}	non destructive		6	A
Peak current I_{out}	t=15ms		250	A
Isolation voltage input/output U_{ISO}	f=50/60Hz		4000	$V_{AC,rms}$

Recommended Operating Conditions

Conditions: $U_b=5V\pm 10\%$, $T_A=25^\circ C$

Measurement Values	Test Conditions	MIN	Typ	MAX	Unit
Operating voltage U_b			5		V
Output voltage U_{out}		12		280	$V_{AC,rms}$
Output current I_{out}	time unlimited, all channels (without forced ventilation)	60		4000	$mA_{AC,rms}$
Output current I_{out}	time unlimited, maximum each second channel in operation, (without forced ventilation)	60		5000	$mA_{AC,rms}$

Static Values

Conditions: $U_b=5V\pm 10\%$, $T_A=25^\circ C$

Measurement Values	Test Conditions	MIN	Typ	MAX	Unit
$U_{in,H}$		3,5		$U_b + 0,6$	V
$U_{in,L}$				1,5	V
$I_{in,H}$	$U_{in}=3,85V$		0,93	1,35	mA
Voltage drop at output	$U_{out}=U_{out,max}$			1,4	V_{AC}

Dynamic Values

Conditions: $U_b=5V\pm 10\%$, $T_A=25^\circ C$

Measurement Values	Test Conditions	MIN	Typ	MAX	Unit
f_{in}				1	VAC cycle
$t_{pd,on}$				0,5	VAC cycle
$t_{pd,off}$				0,5	VAC cycle
$\cos\phi$	Maximum load	0,5		1	

C Accessories

The following products are available as an option (see also chapter 2.6 "Connection Options" on page 30):

ME AK-D78(/1)

78pin D-Sub cable (male - female), 2 m (1 m), for connection of a board of the ME-63Xtend series to the ME-1400(A/B).

ME AK-D25

25pin D-Sub connection cable (male - female), 2 m, for connection of a connector block ME AB-D25M to ST2 of the ME-63Xtend series.

ME AB-D25M

25pin connector block with clamping blocks.

ME AK-D78/1000

Special connection cable from 78pin D-Sub male connector to 2 x 78pin D-Sub female connector for connection of 2 boards of the ME-63Xtend series to a ME-1000 resp. ME-1001.

ME AK-D2578/1000

Special connection cable from 25pin D-Sub male connector to 78pin D-Sub female connector. Required for daisy chain operation of 2 boards of the ME-63Xtend series in combination with a ME-1000 resp. ME-1001.

ME AK-D2578/4000

Special connection cable from 25pin D-Sub male connector to a 78pin D-Sub female connector to connect the ME-63Xtend series with a board of the series ME-630 (incl. MEphisto Switch), ME-4600 and ME-6000.

D Technical Questions

D1 Fax-Hotline

If you should have any technical questions or problems with the board, please send a detailed description of the problem to our hotline:

Fax-Hotline: (+49) (0)89 - 89 01 66-28

eMail: support@meilhaus.de

D2 Service address

We hope that your board will never need to be repaired. If this should become necessary please contact us at the following address:

Meilhaus Electronic GmbH

Service Department

Fischerstraße 2

D-82178 Puchheim/Germany

If you would like to send your board to Meilhaus Electronic for repair, please do not forget to add a detailed description of the problem

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